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EMERGING STOCK PREMIA: SOME EVIDENCE FROM INDUSTRIAL STOCK MARKET DATA

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ABSTRACT

This paper studies the behavior of emerging stock excess returns in an industry-by-industry context. We examine stock market performance for 23 countries and ten industries over 17 years from 1995 to 2012 – a period that includes major changes in capital market regulations, the removal of trade barriers, the IT bubble, the 9/11 terrorist attacks, and the subprime mortgage crisis. In addition, we examine stock market co-movement and risk exposure for ten industries in eight emerging/developing stock markets. We obtain four key empirical findings. First, at industry level, we confirm that the equity risk premium in emerging markets is higher than in developed markets. We also confirm the time-varying nature of emerging stock market excess returns. Second, at country level, we identify those industries that mainly contribute to the presence of the emerging stock premia. Third, we show that some industries are more exposed to global risk factors than others. Fourth, given the increasing degree of co-movement between international stock markets, we observe that some cross-industry portfolio diversification benefits are still exploitable. Our analysis yields interesting implications for financial applications. In particular, we argue that the presence of a strong time-varying component in the "industry-betas" might have strong impact on the estimation of the cost of capital.

Keywords: Emerging and Developing Economies, Industrial Stock Markets, Time-Varying ERP

JEL Classification: D82, F36, F44 G11, G15

INTRODUCTION AND MOTIVATIONS

The behavior of the emerging and developing equity risk premia has been largely studied in the recent financial literature.[1] Common empirical results are: (i) the equity risk premium in emerging markets is higher than in developed markets; (ii) emerging stock market investments increase portfolio diversification benefits; (iii) emerging stock markets are highly volatile; (iv) the extent to which emerging stock markets reward investors is varying through time.[2] In recent years, researches have focused on the effects of the financial liberalizations and global integration process on emerging economic growth and international stock market prices.[3] It is largely accepted that the removal of barriers to international capital flows has decreased the cost of capital (i.e. excepted returns) in emerging stock markets (Bekaert and Harvey, 2000). For example, De Jong and De

[1] See Bekaert, G., 1995. Market integration and investment barriers in emerging equity markets. World Bank Economic Review, 9: 75-107, Bekaert, G. and C.R. Harvey, 1997. Emerging equity market volatility. Journal of Financial Economics, 43: 29-78, Bekaert, G. and C.R. Harvey, 2000. Capital flows and the behavior of emerging market equity returns. Nber chapters. Capital Flows and the Emerging Economies: 159-194., Bekaert, G., B.E. Claude, C.R. Harvey and T.E. Viskanta, 1998. Distributional characteristics of emerging market returns and asset allocation. Journal of Portfolio Management: 102-116., Donadelli, M. and L. Prosperi, 2012a. The equity risk premium: Empirical evidence from emerging markets. CASMEF Working Paper., Donadelli, M. and L. Prosperi, 2012b. The equity premium puzzle: Pitfalls in estimating the coefficient of relative risk aversion. Journal of Applied Finance & Banking, 2(2): 177-213., Donadelli, M. and L. Prosperi, 2012c. On the role of liquidity in emerging markets stock prices. Research in Economics, 66(4): 320-348., Grootveld, H. and R. Salomons, 2003. The equity risk premium: Emerging vs. Developed markets. Emerging Markets Review, 4(2): 121-144., among many others.

[2] For a detailed discussion on the diversification benefits of investing in emerging markets, see Barry, C.B., I. Peavy, J.W. and M. Rodriguez, 1997. A convenient way to invest in emerging markets. Emerging Markets Quarterly, 1(1): 41-48. and Claessens, S., S. Dasgupta and J. Glen, 1995. Return behavior in emerging stock markets. World Bank Economic Review 9(1): 131-151.

[3] See Bekaert, G. and C.R. Harvey, 2000. Capital flows and the behavior of emerging market equity returns. Nber chapters. Capital Flows and the Emerging Economies: 159-194., Henry, P., 2000. Stock market liberalization, economic reform and emerging market equity prices. Journal of Finance, 55(2): 529-564., De Jong, F. and F.A. De Roon, 2005. Time-varying market integration and expected returns in emerging markets. Journal of Financial Economics, 78: 583-613., Kefela, G.T., 2011. Driving forces of globalization in emerging market economies and developing countries. Asian Economic and Financial Review, 1(2): 83-94., Donadelli, M. and L. Prosperi, 2012a. The equity risk premium: Empirical evidence from emerging markets. CASMEF Working Paper, Donadelli, M. and L. Prosperi, 2012c. On the role of liquidity in emerging markets stock prices. Research in Economics, 66(4): 320-348., Hye, Q.M.A. and S. Wizarat, 2013. Impact of financial liberalization on economic growth: A case study of pakistan. Asian Economic and Financial Review, 3(2): 270-282., among many others.

Roon (2005), find that the average annual decrease in segmentation reduces the cost of capital by about 11 basis points, and reduces stock returns by about 4.5%. Donadelli and Prosperi (2012a), in a dynamic context find an opposite results. Their results suggest that financial and real market openness increase, ex-post, expected excess returns in emerging stock markets. In line with Donadelli and Prosperi (2012a), Karadagli (2012) finds that the overall level of globalization significantly improves firm performance in emerging countries. Existing empirical findings also document an increasingly degree of co-movement between international stock markets (see Fig. C.1) as well as between business cycles (see Fig. 4.1).[4] It turns out that emerging markets tend to be more exposed to global macroeconomic shocks. To analyze the behavior of international stock market prices, all these studies have focused on national stock market indices. We argue that few works have employed industrial stock market indices. Using the total return index for 23 countries and ten industries, we improve the existing literature into three main directions. First, we provide new empirical evidence based on an extensive emerging/developing stock markets industry-based dataset. The industry-based analysis allows us to capture the main sources of the observed emerging stock premia (i.e. equity risk premium in emerging markets is higher than in developed markets). We find that some emerging industrial stock markets (e.g. healthcare and utilities) have generated higher average excess returns. In addition, we confirm that emerging industrial stock markets have a strong-time varying component, and are, on average, increasingly integrated. Second, we show that the exposure to the global market factor across industries is relatively heterogeneous and heavily contingent on state and time (e.g. emerging crisis, 9/11 terrorist attacks and Lehman Brothers collapse). Third, we observe that our empirical results have strong implications for mean-variance portfolio diversification strategies and, in a consumption-based asset pricing framework, reflect consumption-smoothing motive (i.e. insurance-motive). Not surprisingly, we find that most emerging industrial stock markets are strongly correlated. Nevertheless, few industries still allow for consumption-smoothing motive and portfolio diversification benefits. For instance, focusing on the last five years, the technology, consumer goods, consumer services and telecommunications sectors would allow for a "wise" portfolio composition. The rest of the paper is organized as follows. Section 2 reviews the literature. Section

[4] See Bekaert, G. and C.R. Harvey, 1997. Emerging equity market volatility. Journal of Financial Economics, 43: 29-78, Bekaert, G. and C.R. Harvey, 2000. Capital flows and the behavior of emerging market equity returns. Nber chapters. Capital Flows and the Emerging Economies: 159-194., Bekaert, G., B.E. Claude, C.R. Harvey and T.E. Viskanta, 1998. Distributional characteristics of emerging market returns and asset allocation. Journal of Portfolio Management: 102-116., Carrieri, F., V. Errunza and K. Hogan, 2007. Characterizing world market integration through time. Journal of Financial and Quantitative Analysis, 42(4): 915-940., Donadelli, M. and L. Prosperi, 2012a. The equity risk premium: Empirical evidence from emerging markets. CASMEF Working Paper., Henry, P., 2000. Stock market liberalization, economic reform and emerging market equity prices. Journal of Finance, 55(2): 529-564., among others.

3 describes data and analyzes emerging stock premia in a static context. Section 4 analyzes the performance and the risk exposure of eight emerging industrial stock markets in a dynamic context. Section 5 concludes.

RELATED LITERATURE

The behavior of the emerging equity risk premium has been largely studied in the last two decades. As mentioned, most of these empirical studies employ national stock market indices. In addition, existing empirical results have been found using pre-2000 data. In contrast, a limited number of studies have employed an updated industry-based dataset. In this paper, we re-evaluate the importance of industries' performances in explaining emerging market stock premia. In general, the financial literature employs industrial stock market indices to construct industry-based risk factors aimed at explaining variation in emerging excess returns. This study is unique in that we directly analyze industries' performances and their exposure to the market factor. Roll (1992) finds that the industry component is significant, which means that stocks from different countries, but from the same industry, are correlated.

Therefore, countries whose stock markets are similar in terms of industry composition will be interdependent (i.e. industry composition is significant in explaining stock market correlation). Serra (2000) draws an opposite conclusion. She finds that country effects are the most important factors driving the behavior of emerging markets' individual stock returns. In other words, emerging market indices are driven by country factors and cross-market correlation does not seem to be affected by the industrial composition of the indices. The same result of Serra is found by Ang *et al.* (2009). They present evidence that the negative relation between lagged idiosyncratic volatility and future average returns is observed across a broad sample of international developed markets. They find also how the negative spread in returns between stocks with high and low idiosyncratic volatility in international markets strongly co-moves with the difference in returns between U.S. stocks with high and low idiosyncratic volatilities.

They conclude that there are not easily diversifiable factors behind this effect. In line with our paper, Brooks and Del (2002) claim that diversification across industries results to be more effective than diversification across countries. Nevertheless, in contrast with our study, they explore the implication of industry only in a regional framework. Similarly, Eiling *et al.* (2012) show that international returns are primarily driven by industry and currency risk factors, but they analyze the G7 countries only. In contrast to our paper, all these studies focus on the role of industries (or industry factors) in explaining variation in emerging stock returns, and as in our paper, they use industrial stock market indices.

International Excess Returns: Some Stylized Facts

We download country-by-country and industry-by-industry TRIs from Datastream Global Equity Indices (DGEI).[5] For each country, ten or less different industrial TRIs are available. All indices are monthly total returns denominated in US dollars (i.e. dividends are included) and run from January 1995 (or later) to June2012. We examine the behavior of the following industrial stock market excess returns: Oil & Gas, Basic Materials, Consumer Goods, Consumer Services, Industries, HealthCare, Financials, Technology, Telecom and Utilities. Details on DGEI are given in appendix B. The full set of industry-based TRIs is available for eight emerging countries (i.e. Brazil, Chile, China, Malaysia, Israel, Singapore, Thailand, Turkey). We decide to restrict the large part of our dynamic analysis on to these eight markets. We argue that they represent a reasonable set of stock markets in which a US international investor might be interested. For comparison purposes, we use the US industrial stock market indices. Stock returns are computed for each industry *i* in country *k*. Formally,

$$R^i_{k,t} = \frac{GEI\ TRI^{\ i}_{k,t} - GEI\ TRI^{\ i}_{k,t-1}}{GEI\ TRI^{\ i}_{k,t-1}} \qquad (3.1)$$

where $GEI\ TRI^i_{k,t}$ represents the DGEI of industry *i* in the emerging country *k* at time *t*. We obtain the excess return by subtracting a risk-free rate proxy from Eq. (3.1). Formally,

$$ExR^i_{k,t} = R^i_{k,t} - R^f_t \qquad (3.2)$$

where R^f_t is the one-month Treasury bill rate (from Ibbotson Associates).

Definition 1: *The excess return spread of industry i in country k is given by*

$$Spread^i_{k,t} = ExR^i_{k,t} - ExR^i_{US,t}$$

where $ExR^i_{k,t}$ *is the excess return of industry i in the emerging country k and* $ExR^i_{US,t}$ *is the excess return of industry i in the US.*

Summary statistics for the 23 equity market excess returns are reported in Table B.1. For each country, we compute the mean (first line), standard deviation (second line) and Sharpe ratio (third line). The fourth line of Table B.1 reports the industry average spread (as defined in Def. 1) for

[5] Datastream Global Equity Indices break down into six levels. Level 1 is the market index, this covers all the sectors in each region or country. Level 2 divides the market into 10 industries and covers all the sectors within each group in each region or country. Source: Datastream.

each emerging stock market *k*. As expected, the emerging average industrial stock market excess returns are higher than the US average industrial stock market excess returns. The average spread appears to be positive both across industries and countries (i.e. longitudinal and vertical averages of line four in Table B.1). We argue that negative spreads are mainly influenced by local shocks (i.e. emerging crisis of the late '90s and early '00s).[6] Clearly, a post-crises (or dynamic) analysis will deliver different results (see Fig. 3.1).

Definition 2: *The country-by-country industrial average spread is given by*

$$Country\ Avg\ Spread_k = \frac{1}{I}\sum_{i=1}^{I}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{k,t}\right\}_i$$

where i represents the industry and k denotes the emerging country.

Emerging country - cross-industry - average spreads (i.e. Def. 2) are illustrated in Table 3.1. In line with existing empirical findings on emerging stock markets' performances, our estimates suggest that emerging stock markets tend to perform better than the US stock market. For the sample January 1995 - June 2012 the emerging countries' average spread is negative only in four out of 22 stock markets. On annual basis, the average spread in Argentina, Philippines, Sri Lanka and Taiwan is equal to -1.80%, -1.49%, -14.90% and -0.47%, respectively. The positive spread ranges from a minimum of 0.85% (Hungary) to a maximum of 21.80% (Russia). Results in Table. B.1 suggest that the performance of the Russian stock market has been driven by the consumer services sector. Line 4 (Russia) of Table 4.1 shows that the consumers services industry annual average excess return is equal to 46.8%.

Table-3.1. Emerging Countries: Country Average Spread. Average values (computed as is Def. 2) are in annual terms and expressed in percentage points. Sample: January 1995 (or later) – June 2012.

Country	Mean	Country	Mean
ARGENTINA	-1.80	PAKISTAN	2.34
BRAZIL	9.83	PERU	11.62
CHILE	2.18	PHIL	-1.49
CHINA	13.07	POLAND	3.95

[6] For example, we obtain negative spread average values in the following countries (industries): Argentina (oil&gas, consumer goods, financials, utilities); Mexico (consumer goods, industrials); Philippines (oil&gas, basic materials, consumer goods, consumer services, financials). E.g. crisis dates: Argentina (1995, 2001-2002); Mexico (1994-2000), Philippines (1997-2002).

CZ REP	5.96	RUSSIA	21.18
HONG-KONG	5.35	SINGAPORE	3.51
HUNGARY	0.85	SOUTH AFRICA	6.57
INDIA	5.89	SRI LANKA	-14.90
ISRAEL	4.24	TAIWAN	-0.47
MALAYSIA	3.04	THAI	3.19
MEXICO	6.00	TURKEY	20.07

Definition 3: *The industry-by-industry average spread is given by*

$$Industry\ Avg\ Spread_i = \frac{1}{K}\sum_{k=1}^{K}\left\{\frac{1}{T}\sum_{t=1}^{T} Spread_{i,t}\right\}_k$$

where i represent the industry and k denotes the country.

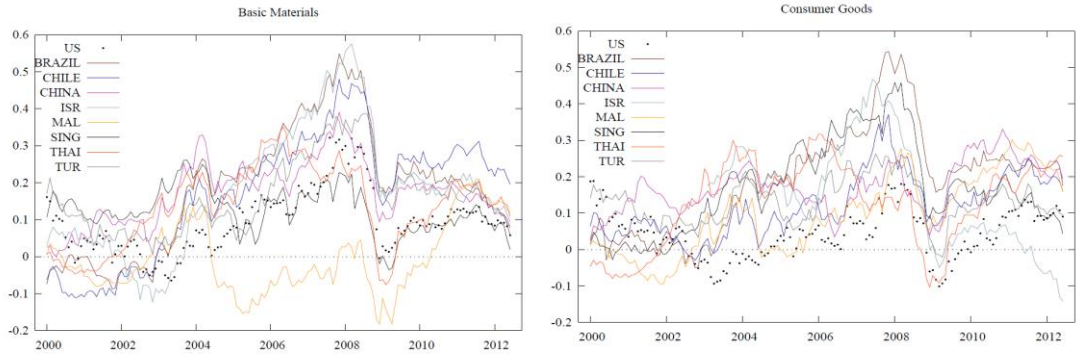
Table 3.2 reports the empirical counterparts of Def. 3 for two sets of emerging stock markets: a full set containing all emerging countries and a set composed by our eight benchmark emerging economies. For both sets, we find that the average spread is positive across all industries (i.e. emerging industry-ERP is higher than the US industry-ERP). In both sets, the highest cross-country industry average spread has been generated by the healthcare industry. For the set composed by all the emerging countries, Table 2.3 shows that the annual average spread is equal to 12.05%. For the set composed by the eight benchmark economies, the spread is equal to 16.05%. In other words, our simple results suggest that the healthcare emerging industrial stock market has dominated all the other industrial stock markets over the last 15 years. It turns out that such industry has provided a substantial contribution to the extra premium paid by the emerging stock market world to international investors. Table B.1 suggests that emerging healthcare extra premium has been largely driven by the Chinese healthcare industry (i.e. an annual average spread for the Chinese healthcare industry is 49.2%).

Table-3.2. Emerging Countries: Industry Average Spread. Average values (computed as is Def. 3) are annualized and expressed in percentage points. Sample: January 1995 (or later) – June 2012.

Country	**Average (All Emerging)**	**Average (8 Emerging)**
Oil & Gas	5.12	4.73
Basic Materials	5.01	5.97
Consumer Goods	6.28	9.94
Consumer Services	6.77	6.10
Industrials	2.69	3.25
HealthCare	12.05	16.05
Financials	5.98	4.80
Telecom	5.63	5.85
Technology	5.37	7.22
Utilities	0.50	10.01

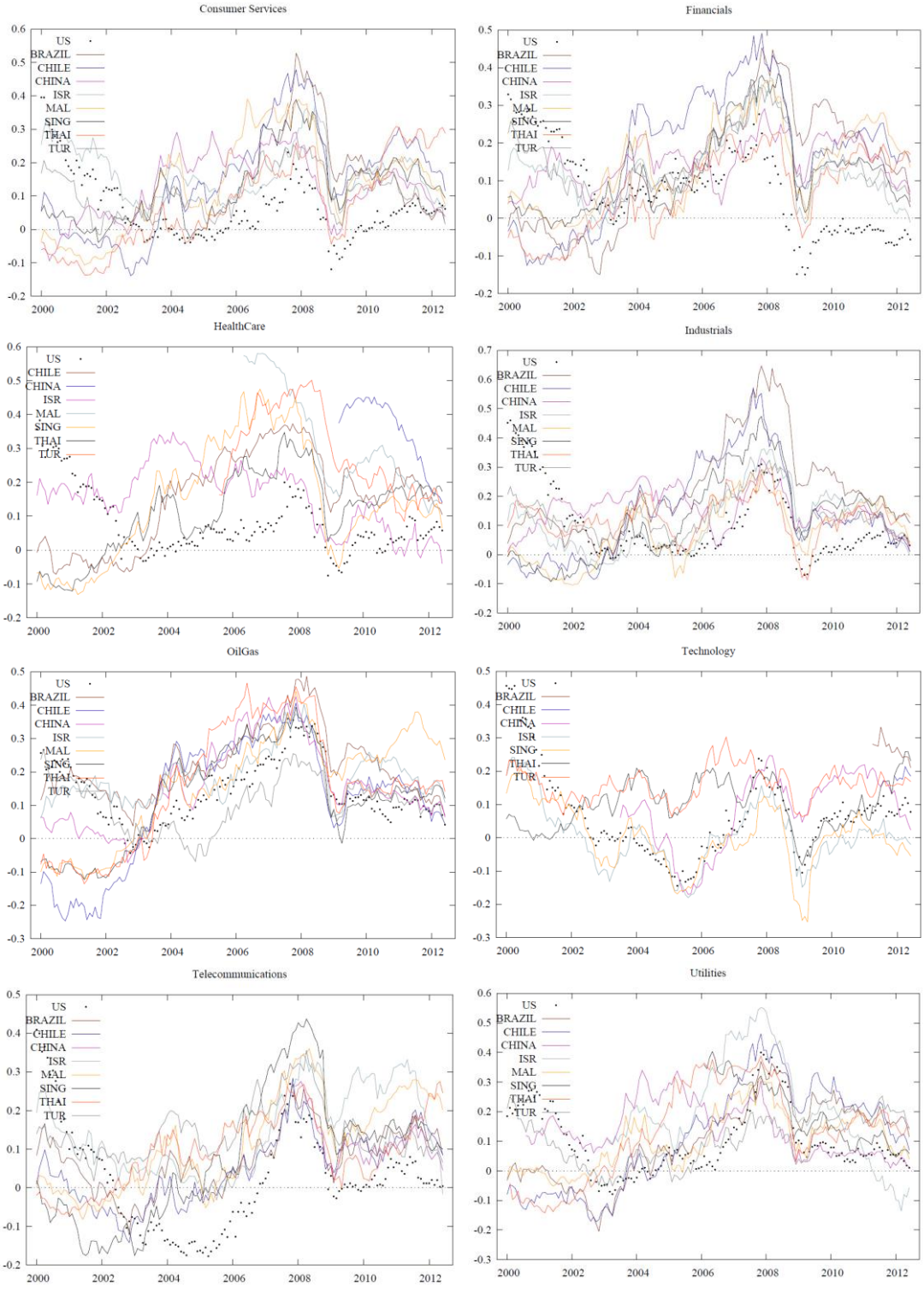
The result is obviously sample and state sensitive. Given that average emerging excess returns have a strong time-varying component, we conduct our industry-by-industry performance analysis in a time-varying framework. Fig. 3.1 illustrates the dynamics of the industrial stock market average (computed per unit of risk) excess returns for the following countries: United States, Brazil, Chile, China, Israel, Malaysia, Singapore, Thailand, Turkey. In all subplots the black dashed line represents the US industries. Both across industries and countries, we observe similar Sharpe ratios' patterns. Sharpe ratios are estimated using a rolling window of 60 months.[7] Emerging industry Sharpe ratios are much more volatile than the US industrial Sharpe ratios. The result confirms the unstable industrial structure of the emerging economies. A more generous average compensation is also evident. The performance of the healthcare industry (corrected per unit of risk) still seems to dominate all the others (see subplot "HealthCare" of Fig. 3.1) . A relevant contribution is also given by the consumer goods and utility industries. Their cross-windows average performances are 9.94% and 10.01%, respectively.[8]

Figure-3.1. Industry-by-Industry Sharpe ratios. Sharpe ratios - computed as the ratio between the excess return and the standard deviation of each industry TRI - are estimated using a rolling sample of 60 months. Formally, $ShR_k^i = ExR_{k,w}^i / Sd_{k,w}^i$, where *w* represents the window in which the ratio is estimated. The sample period goes from January 1995 (or later) to June 06.



[7] The number of observations per estimation is 60. The first estimation window is January 1995-December 1999. The second is February 1995-January 2000. There are 150 estimation windows. The final estimation window is July 2007-June 2012.

[8] Note: the average is computed over the total number of estimated Sharpe ratios (i.e. total number of widows).


Consumer Services
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Financials
HealthCare
Industrials
OilGas
Technology
Telecommunications
Utilities

To capture the time-varying exposure of the emerging industrial stock markets to the global market risk factor, we estimate a standard one-factor asset pricing linear model in a rolling-window framework. We focus on the standard formulation put forward by Sharpe (1964) and Lintner (1965). In particular, as in Black *et al.* (1972), we consider the following linear regression

$$ExR^{i}_{k,t} = \alpha^{i}_{k,t} + \beta^{i}_{k,m}\lambda_{t} + \varepsilon^{i}_{k,t} \qquad (3.3)$$

where $ExR^{i}_{k,t}$ is the excess return of industry *i* in country *k*, λ_t the excess return on the market (i.e. $R_m - R^f$), $\alpha^{i}_{k,t}$ and $\beta^{i}_{k,m}$ are the regression parameters, and $\varepsilon^{i}_{k,t}$ is the error term. The intercept, $\alpha^{i}_{k,t}$, measures the average monthly abnormal excess return (i.e. Jensen's alpha).[9] The first simple way to check if the CAPM holds, it is to run a test of significance on the intercept of this linear regression, proceeding asset by asset. In line with the purpose of this study, we do not focus on testing the validity of the model. Instead, we focus on the average estimated coefficient $\alpha^{i}_{k,t}$ across emerging and US industrial stock markets. The intercept is a value extensively employed in finance to evaluate the performance of asset and fund managers. In particular, it indicates whether or not on average the observed returns on an asset are larger (or smaller) than the value consistent with the CAPM. The sample period goes from January 1995 (or later) to June 2012 and the market excess return is from the Kenneth French Data Library.[10] We estimate Eq. (3.3), via standard OLS, in a time-varying context.[11] In particular, the parameters $\alpha^{i}_{k,t}$ and $\beta^{i}_{k,m}$ are estimated using a rolling window of 60 months.

[9] See Jensen, M.C., 1968. The performance of mutual funds in the period 1945-1964. Journal of Finance, 23(2): 389-416.

[10] The excess return on the market $R_m - R^f$ is publicly available at

http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/f-f_factors.html.

[11] Formally, $\hat{\beta}^{i}_{k} = \frac{\hat{\sigma}^{k}_{i,m}}{\hat{\sigma}^{2}_{m}}; \qquad \hat{\alpha}^{k}_{i} = \bar{z}^{k}_{i} - \hat{\beta}^{i}_{k}\bar{z}_{m}$

Definition 4: *The estimated alpha average spread is given by*

$$Alpha\ Avg\ Spread^{i}_{k_e} = \left(\frac{1}{W}\sum_{w=1}^{W}\hat{\alpha}^{i}_{k_e,w}\right) - \left(\frac{1}{w}\sum_{w=1}^{W}\hat{\alpha}^{i}_{US,w}\right)$$

where i denotes the industry, k_e denotes the emerging country, and w define the window in which the intercept (α) *is estimated.*

The sample counterparts of Def. 4 are reported in Table 3.3. We find that Brazil, China and Turkey deliver the highest annual rolling average Jensen's alpha spreads (i.e. 0.1829, 0.2084 and 0.2349, respectively). In China and Turkey, the healthcare industry displays the greatest individual performance. The technology sector seems to dominate in Brazil, Chile and Turkey. Outstanding performances are achieved also by the Basic Materials and Consumer Goods industries in Brazil, China, Israel, Thailand and Turkey. The utilities sector has the highest alpha average spread in Singapore. The results are obviously sample sensitive. Our "CAPM alpha spreads" seem to support the average performances presented in Table 3.1. Not surprisingly, the healthcare industry delivers the highest cross-country average alpha spread (i.e. 0.244).

Table-3.3. Average Alpha Spread. The US stock market is used as benchmark. Intercepts of Eq. (3.3) are estimated via standard OLS using a rolling sample of 60 months. Estimated values are annualized. Standard errors are Newey and West (1987). The sample goes from January 1995 (or later) to June 2012.

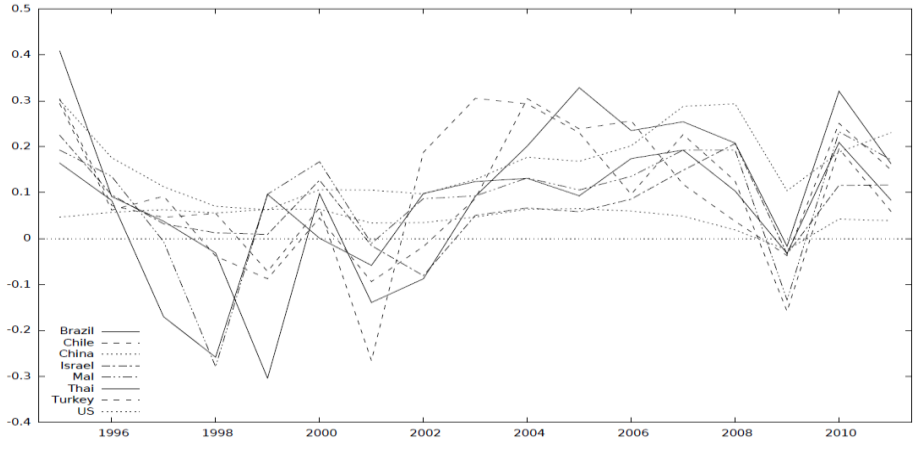
	BRAZIL	CHILE	CHINA	ISR	MAL	SING	THAI	TUR
Basic Materials	0.1701	0.0734	0.2209	0.1229	-0.0789	0.1269	0.0862	0.2201
Cons. Goods	0.2143	0.0678	0.2749	0.1472	0.0518	0.1564	0.1254	0.2016
Cons. Services	0.2391	0.0809	0.1242	0.1244	0.0504	0.0495	0.0185	0.1783
Financials	0.1350	0.0777	0.1706	0.0797	0.0777	0.0517	-0.0021	0.2388
Health Care	na	0.1210	0.6427	0.1088	0.3106	0.0434	0.0528	0.4287
Industrials	0.1962	0.0418	0.2245	0.0478	-0.0118	0.0244	0.1113	0.1952
Oil & Gas	0.2050	0.0100	0.0901	0.1025	0.0021	0.0536	0.0690	0.0872
Technology	0.3409	0.1656	0.0777	-0.0441	na	-0.0537	0.0904	0.3546
Telecom	0.0915	0.0407	0.1514	0.1257	0.0812	0.0512	0.0829	0.3086
Utilities	0.0543	0.0150	0.1070	0.1580	0.0000	0.2406	0.0426	0.1363
Avg	0.1829	0.0694	0.2084	0.0973	0.0537	0.0744	0.0677	0.2349
Min	0.0543	0.0100	0.0777	-0.0441	-0.0789	-0.0537	-0.0021	0.0872
Max	0.3409	0.1656	0.6427	0.1580	0.3106	0.2406	0.1254	0.4287

where $\bar{z}_i^k$ and $\bar{z}_m$ are the sample means for the excess returns of industry *i* (in country *k*) and the market portfolio, respectively, while $\hat{\sigma}_{i,m}^k$ is the sample covariance between the two excess returns and $\hat{\sigma}_m^2$ sample variance of the market portfolio return.

International Business Cycles and Stock Market Co-Movements

The effects of the global integration process on emerging stock market returns have been widely discussed in literature. Fig. 4.1 also suggests that the international economies are becoming increasingly integrated. It is popularly believed that financial and economic integration are strictly related.[12] Recent studies document a reduction in cross-country diversification benefits. Fig. C.1 reports the dynamics of the correlation coefficients between the emerging and the US industrial stock market excess returns. At the industry level, we observe, ex-post, that few cross-industry diversification benefits can be exploited. Fig 4.2 reports the dynamics of the "market beta" (estimated via Eq. (3.3)). In contrast to existing empirical findings (see (Grootveld and Salomons, 2003), mainly based on national stock market indices, we find that some industries cannot be classified as "high-beta stock markets". In few countries, these industries pay less than the market average excess returns. The result is dynamically consistent. Betas are found to be constantly less than one in the financials and utilities sectors in the following countries: Chile, Malaysia and Israel. At the beginning of the sample, all emerging betas, in all emerging economies, are less than one (and negative in few cases). In all subplots of Fig. 4.2, the dashed black line represents the estimated US industrial stock market betas. As expected, we find that the US betas are less volatile than the emerging betas.

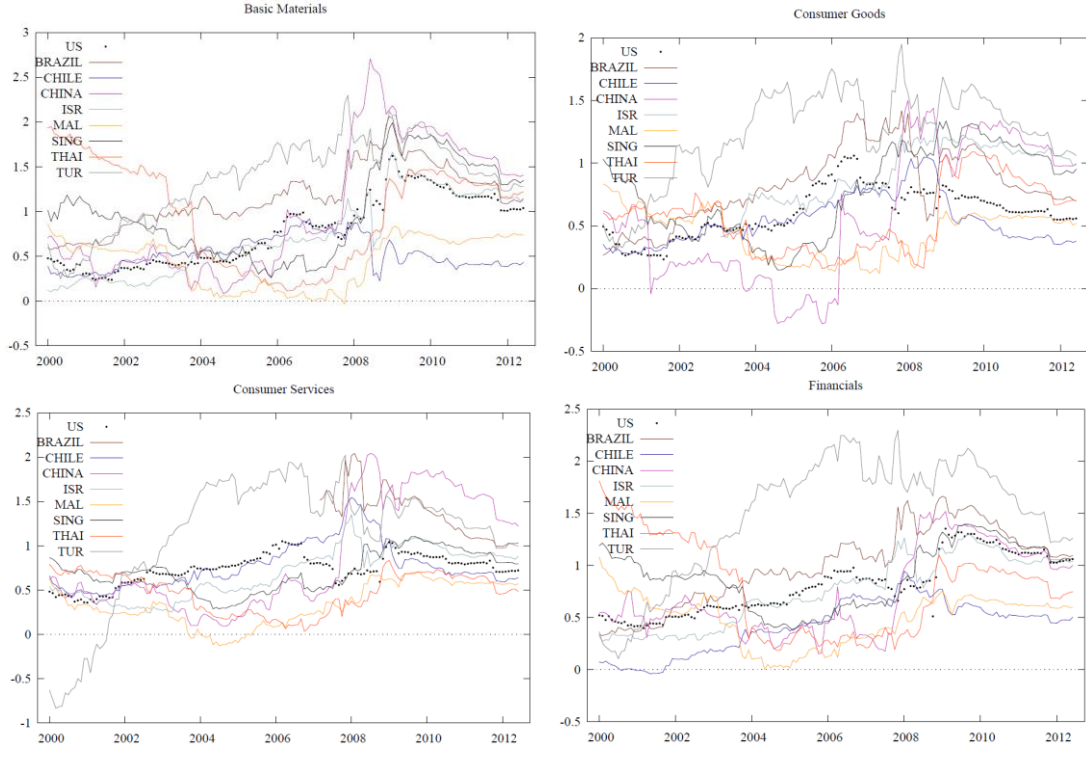
Figure-4.1. International Business Cycles. This figure shows the cyclical components of the nominal (US$) GDP growth rate for the United States, Brazil, Chile, China, Israel, Malaysia, Thailand and Turkey. Cyclical components are extracted using the Hodrick and Prescott (1980) business cycle filter. Following empirical practice, we use a smoothing parameter $\lambda = 100$. Data are annual and run from 1995 to 2011. Source: IMF

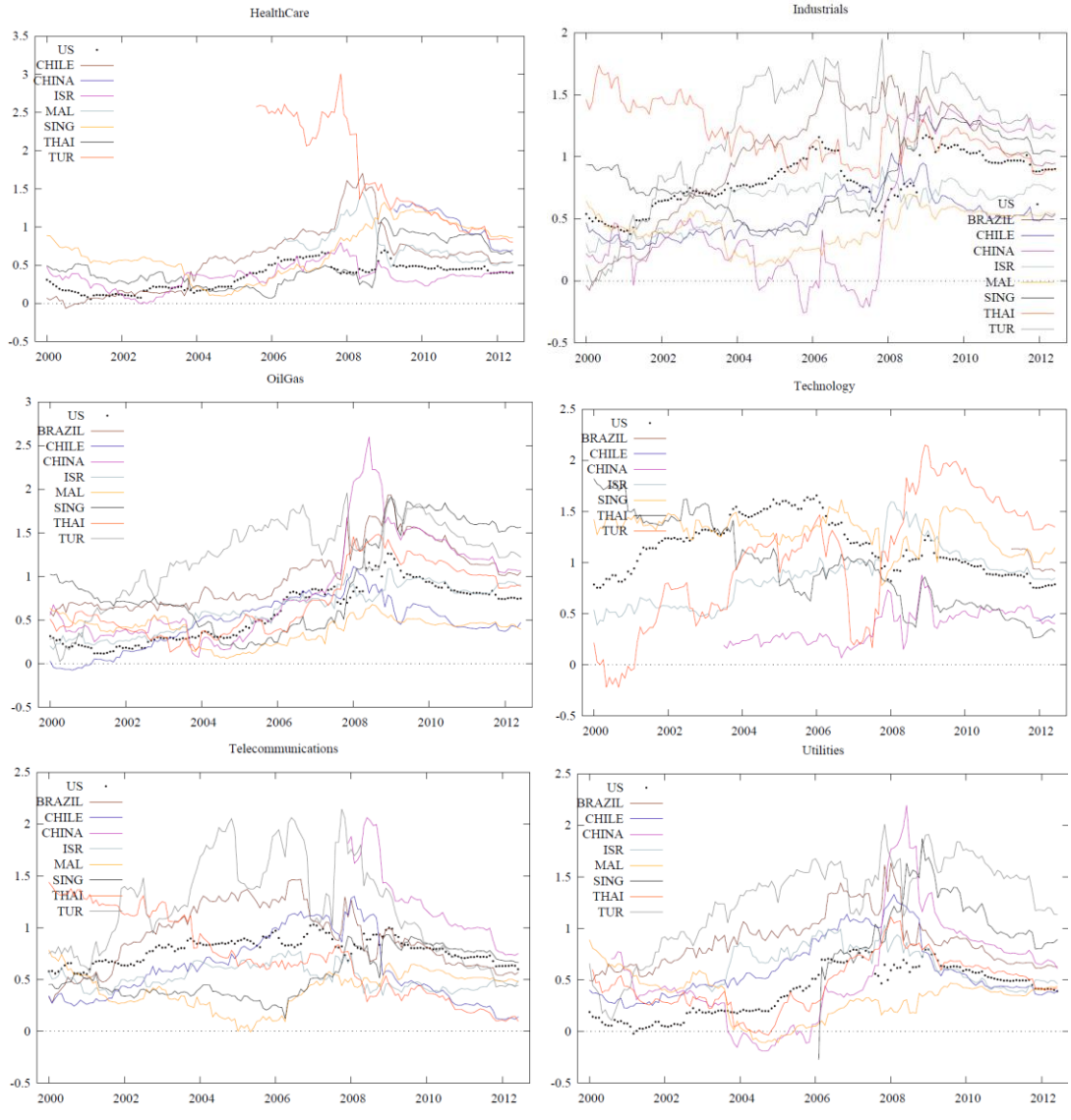


[12] See, for example, Phylaktis, K. and F. Ravazzolo, 2002. Measuring financial and economic integration with equity prices in emerging markets. Journal of International Money and Finance, 21: 879-903.

Our empirical regularities are key, and provides practical implications. First, we observe that some cross-industry diversification opportunities should be exploited. In contrast, recent empirical findings suggest that national indexes tend to be much more exposed to global factors. Second, we find that some industries carry a small, but exploitable, insurance component. We refer to those industries that show a "low-beta". Given that the market represents an indicator of the state of the economy, assets that are less volatile than the market will be much more desirable in bad states of the economy. To hold these assets (i.e. to be less exposed to bad states), an international investor has to pay a premium (i.e. lower return). To conclude, we argue that the presence of a strong time-varying component in the dynamics of the risk exposure (i.e. industrial stock market betas) might have strong implications for the estimation of the cost of capital.

Figure-4.2. Industry-by-Industry Rolling Betas (One-Factor Model). The beta parameter of Eq. (3.3) are estimated, via standard OLS, using a rolling sample of 60 months. Standard errors are Newey and West (1987). Sample: January 1995 (or later) – June 2012.





CONCLUSION

Over the last twenty years, and especially after liberalizations, emerging stock markets have captured the attention of many scholars as well as many practitioners. Emerging markets' empirical regularities are well known (e.g. high returns, high volatility, time-varying moments). We improve the existing literature by providing an ex-post country-by-country and industry-by-industry standard performance analysis. We obtain two main results. First, we show that some emerging industrial stock markets are more generous than others. In particular, we find that the average extra premia paid by emerging markets to international investors has been mainly driven by the healthcare sector. Second, we find that some industries still incorporate diversification benefits as

well as insurance properties. Our results have implications for financial applications. In particular, they provide insights for the implementation of portfolio diversification strategies and the estimation of the cost of capital.

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APPENDIX

A. Data

Table-A.1. Datastream Global Equity Indices (DGEI). All returns are denominated in US$. DGEI break down into six levels. Level 1 is the market index, this covers all the sectors in each region or country. Level 2 divides the market into 10 industries and covers all the sectors within each group in each region or country. Levels 3 - 6 subdivide the level 2 classifications into sector classifications in increasing detail. Sample: December 1994 (or later) - June 2012. Source: Datastream.

Industrial Stock Market Indices	Period	Industrial Stock Market Indices	Period
US-DS Oil & Gas	Dec 94 – Jun 12	ARGENTINA-DS Oil & Gas	Dec 94 – Jun 12
US-DS Basic Mats	Dec 94 – Jun 12	ARGENTINA-DS Basic Mats	Dec 94 – Jun 12
US-DS Consumer Gds	Dec 94 – Jun 12	ARGENTINA-DS Consumer Gds	Dec 94 – Jun 12
US-DS Consumer Svs	Dec 94 – Jun 12	ARGENTINA-DS Consumer Svs	Dec 94 – Jun 12
US-DS Industrials	Dec 94 – Jun 12	ARGENTINA-DS Industrials	Dec 94 – Jun 12
US-DS Health Care	Dec 94 – Jun 12	ARGENTINA-DS Financials	Dec 94 – Jun 12
US-DS Financials	Dec 94 – Jun 12	ARGENTINA-DS Telecom	Dec 94 – Jun 12
US-DS Telecom	Dec 94 – Jun 12	ARGENTINA-DS Utilities	Dec 94 – Jun 12
US-DS Technology	Dec 94 – Jun 12	BRAZIL-DS Oil & Gas	Dec 94 – Jun 12
US-DS Utilities	Dec 94 – Jun 12	BRAZIL-DS Basic Mats	Dec 94 – Jun 12
HONG KONG-DS Oil & Gas	Dec 94 – Jun 12	BRAZIL-DS Consumer Gds	Dec 94 – Jun 12
HONG KONG-DS Basic Mats	Dec 94 – Jun 12	BRAZIL-DS Consumer Svs	Feb 02 – Jun 12
HONG KONG-DS Consumer Gds	Dec 94 – Jun 12	BRAZIL-DS Industrials	Dec 94 – Jun 12
HONG KONG-DS Consumer Svs	Dec 94 – Jun 12	BRAZIL-DS Health Care	Nov 07 – Jun 12
HONG KONG-DS Industrials	Dec 94 – Jun 12	BRAZIL-DS Financials	Dec 94 – Jun 12
HONG KONG-DS Financials	Dec 94 – Jun 12	BRAZIL-DS Telecom	Dec 94 – Jun 12
HONG KONG-DS Telecom	Dec 94 – Jun 12	BRAZIL-DS Technology	Mar 06 – Jun 12
HONG KONG-DS Technology	Dec 94 – Jun 12	BRAZIL-DS Utilities	Dec 94 – Jun 12
HONG KONG-DS Utilities	Dec 94 – Jun 12	CHILE-DS Oil & Gas	Dec 94 – Jun 12
ISRAEL-DS Oil & Gas	Dec 94 – Jun 12	CHILE-DS Basic Mats	Dec 94 – Jun 12

ISRAEL-DS Basic Mats	Dec 94 – Jun 12	CHILE-DS Consumer Gds	Dec 94 – Jun 12
ISRAEL-DS Consumer Gds	Jan 98 – Jun 12	CHILE-DS Consumer Svs	Dec 94 – Jun 12
ISRAEL-DS Consumer Svs	Jan 98 – Jun 12	CHILE-DS Industrials	Dec 94 – Jun 12
ISRAEL-DS Industrials	Dec 94 – Jun 12	CHILE-DS Health Care	Dec 94 – Jun 12
ISRAEL-DS Health Care	Dec 94 – Jun 12	CHILE-DS Financials	Dec 94 – Jun 12
ISRAEL-DS Financials	Dec 94 – Jun 12	CHILE-DS Telecom	Dec 94 – Jun 12
ISRAEL-DS Telecom	Dec 94 – Jun 12	CHILE-DS Technology	Dec 94 – Jun 12
ISRAEL-DS Technology	Dec 94 – Jun 12	CHILE-DS Utilities	Dec 94 – Jun 12
ISRAEL-DS Utilities	Jan 98 – Jun 12	COLOMBIA-DS Oil & Gas	Dec 94 – Jun 12
SINGAPORE-DS Oil & Gas	Dec 94 – Jun 12	COLOMBIA-DS Basic Mats	Dec 94 – Jun 12
SINGAPORE-DS Basic Mats	Dec 94 – Jun 12	COLOMBIA-DS Consumer Gds	Dec 94 – Jun 12
SINGAPORE-DS Consumer Gds	Dec 94 – Jun 12	COLOMBIA-DS Consumer Svs	Dec 94 – Jun 12
SINGAPORE-DS Consumer Svs	Dec 94 – Jun 12	COLOMBIA-DS Industrials	Jan 98 – Jun 12
SINGAPORE-DS Industrials	Dec 94 – Jun 12	COLOMBIA-DS Financials	Dec 94 – Jun 12
SINGAPORE-DS Health Care	Dec 94 – Jun 12	COLOMBIA-DS Telecom	Oct 03 – Jun 12
SINGAPORE-DS Financials	Dec 94 – Jun 12	COLOMBIA-DS Utilities	Dec 94 – Jun 12
SINGAPORE-DS Telecom	Dec 94 – Jun 12	MEXICO-DS Basic Mats	Dec 94 – Jun 12
SINGAPORE-DS Technology	Dec 94 – Jun 12	MEXICO-DS Consumer Gds	Dec 94 – Jun 12
SINGAPORE-DS Utilities	Jan 01 – Jun 12	MEXICO-DS Consumer Svs	Dec 94 – Jun 12
TAIWAN-DS Oil & Gas	Jan 04 – Jun 12	MEXICO-DS Industrials	Dec 94 – Jun 12
TAIWAN-DS Basic Mats	Dec 94 – Jun 12	MEXICO-DS Health Care	Jul 98 – Jun 12
TAIWAN-DS Consumer Gds	Dec 94 – Jun 12	MEXICO-DS Financials	Dec 94 – Jun 12
TAIWAN-DS Consumer Svs	Dec 94 – Jun 12	MEXICO-DS Telecom	Dec 94 – Jun 12
TAIWAN-DS Industrials	Dec 94 – Jun 12	PERU-DS Oil & Gas	Avr 04 – Jun 12
TAIWAN-DS Financials	Dec 94 – Jun 12	PERU-DS Basic Mats	Dec 94 – Jun 12
TAIWAN-DS Telecom	Sep 00 – Jun 12	PERU-DS Consumer Gds	Dec 94 – Jun 12

TAIWAN-DS Technology	Mar 96 – Jun 12	PERU-DS Consumer Svs	Jan 01 – Jun 12
CHINA-DS Oil & Gas	Dec 94 – Jun 12	PERU-DS Industrials	Dec 94 – Jun 12
CHINA-DS Basic Mats	Dec 94 – Jun 12	PERU-DS Financials	Dec 99 – Jun 12
CHINA-DS Consumer Gds	Dec 94 – Jun 12	PERU-DS Telecom	Dec 94 – Jun 12
CHINA-DS Consumer Svs	Dec 94 – Jun 12	PERU-DS Utilities	Aug 96 – Jun 12
CHINA-DS Industrials	Dec 94 – Jun 12	CZECH REP.-DS Consumer Gds	Dec 94 – Jun 12
CHINA-DS Health Care	Mar 04 – Jun 12	CZECH REP.-DS Consumer Svs	Mar 95 – Jun 12
CHINA-DS Financials	Dec 94 – Jun 12	CZECH REP.-DS Industrials	Dec 94 – Jun 12
CHINA-DS Telecom	Nov 02 – Jun 12	CZECH REP.-DS Financials	Dec 94 – Jun 12
CHINA A-DS Technology	Jun 08 – Jun 12	CZECH REP.-DS Telecom	Mar 95 – Jun 12
CHINA-DS Utilities	Jul 95 – Jun 12	CZECH REP.-DS Utilities	Dec 94 – Jun 12
INDIA-DS Oil & Gas	Dec 94 – Jun 12	HUNGARY-DS Oil & Gas	Dec 95 – Jun 12
INDIA-DS Basic Mats	Dec 94 – Jun 12	HUNGARY-DS Basic Mats	Dec 94 – Jun 12
INDIA-DS Consumer Gds	Dec 94 – Jun 12	HUNGARY-DS Consumer Gds	Dec 94 – Jun 12
INDIA-DS Industrials	Dec 94 – Jun 12	HUNGARY-DS Industrials	May 97 – Jun 12
INDIA-DS Health Care	Dec 94 – Jun 12	HUNGARY-DS Health Care	Dec 94 – Jun 12
INDIA-DS Financials	Dec 94 – Jun 12	HUNGARY-DS Financials	Dec 94 – Jun 12
INDIA-DS Telecom	Dec 94 – Jun 12	HUNGARY-DS Telecom	Nov 97 – Jun 12
INDIA-DS Technology	Dec 94 – Jun 12	HUNGARY-DS Technology	May 99 – Jun 12
INDIA-DS Utilities	Dec 94 – Jun 12	HUNGARY-DS Utilities	Dec 94 – Jun 12
INDONESIA-DS Basic Mats	Dec 94 – Jun 12	POLAND-DS Oil & Gas	Feb 06 – Jun 12
INDONESIA-DS Consumer Gds	Dec 94 – Jun 12	POLAND-DS Basic Mats -	Dec 94 – Jun 12
INDONESIA-DS Consumer Svs	Jul 07 – Jun 12	POLAND-DS Consumer Gds	Jul 96 – Jun 12
INDONESIA-DS Industrials	Dec 94 – Jun 12	POLAND-DS Consumer Svs	Nov 95 – Jun 12
INDONESIA-DS Health Care	Dec 94 – Jun 12	POLAND-DS Industrials	Sep 96 – Jun 12
INDONESIA-DS Financials	Dec 94 – Jun 12	POLAND-DS Financials	Dec 94 – Jun 12
INDONESIA-DS Telecom	Dec 94 – Jun 12	POLAND-DS Telecom	Nov 98 – Jun 12
INDONESIA-DS	Jul 09 – Jun 12	POLAND-DS Technology	Feb 98 – Jun 12

Technology			
INDONESIA-DS Utilities	Dec 03 – Jun 12	POLAND-DS Utilities	Nov 00 – Jun 12
MALAYSIA-DS Oil & Gas	Dec 94 – Jun 12	RUSSIA-DS Oil & Gas	Feb 98 – Jun 12
MALAYSIA-DS Basic Mats	Dec 94 – Jun 12	RUSSIA-DS Basic Mats	Nov 01 – Jun 12
MALAYSIA-DS Consumer Gds	Dec 94 – Jun 12	RUSSIA-DS Consumer Gds	Jan 03 – Jun 12
MALAYSIA-DS Consumer Svs	Dec 94 – Jun 12	RUSSIA-DS Consumer Svs	Avr 99 – Jun 12
MALAYSIA-DS Industrials	Dec 94 – Jun 12	RUSSIA-DS Industrials	Feb 05 – Jun 12
MALAYSIA-DS Health Care	Avr 01 – Jun 12	RUSSIA-DS Health Care	Sep 07 – Jun 12
MALAYSIA-DS Financials	Dec 94 – Jun 12	RUSSIA-DS Financials	Avr 98 – Jun 12
MALAYSIA-DS Telecom	Dec 94 – Jun 12	RUSSIA-DS Telecom	Feb 98 – Jun 12
MALAYSIA-DS Technology	Mar 10 – Jun 12	RUSSIA-DS Utilities	Feb 98 – Jun 13
MALAYSIA-DS Utilities	Dec 94 – Jun 12	SOUTH AFRI-DS Oil & Gas	Dec 94 – Jun 12
PAKISTAN-DS Oil & Gas	Dec 94 – Jun 12	SOUTH AFRI-DS Basic Mats	Dec 94 – Jun 12
PAKISTAN-DS Basic Mats	Dec 94 – Jun 12	SOUTH AFRI-DS Consumer Gds	Dec 94 – Jun 12
PAKISTAN-DS Consumer Gds	Dec 94 – Jun 12	SOUTH AFRI-DS Consumer Svs	Dec 94 – Jun 12
PAKISTAN-DS Consumer Svs	Dec 94 – Jun 12	SOUTH AFRI-DS Industrials	Dec 94 – Jun 12
PAKISTAN-DS Industrials	Dec 94 – Jun 12	SOUTH AFRI-DS Health Care	Dec 94 – Jun 12
PAKISTAN-DS Health Care	Dec 94 – Jun 12	SOUTH AFRI-DS Financials	Dec 94 – Jun 12
PAKISTAN-DS Financials	Dec 94 – Jun 12	SOUTH AFRI-DS Telecom	Jan 96 – Jun 12
PAKISTAN-DS Telecom	Dec 94 – Jun 12	TURKEY-DS Oil & Gas	Dec 94 – Jun 12
PAKISTAN-DS Utilities	Dec 94 – Jun 12	TURKEY-DS Basic Mats	Dec 94 – Jun 12
PHILIPPINE-DS Oil & Gas	Dec 94 – Jun 12	TURKEY-DS Consumer Gds	Dec 94 – Jun 12
PHILIPPINE-DS Basic Mats	Dec 94 – Jun 12	TURKEY-DS Consumer Svs	Dec 94 – Jun 12
PHILIPPINE-DS Consumer Gds	Dec 94 – Jun 12	TURKEY-DS Industrials	Dec 94 – Jun 12
PHILIPPINE-DS Consumer Svs	Dec 94 – Jun 12	TURKEY-DS Health Care	Jul 00 – Jun 12
PHILIPPINE-DS Industrials	Dec 94 – Jun 12	TURKEY-DS Financials	Dec 94 – Jun 12
PHILIPPINE-DS	Dec 94 – Jun 12	TURKEY-DS Telecom	Dec 94 – Jun 12

Financials			
PHILIPPINE-DS Telecom	Dec 94 – Jun 12	TURKEY-DS Technology	Dec 94 – Jun 12
PHILIPPINE-DS Utilities	Dec 94 – Jun 12	TURKEY-DS Utilities	Dec 94 – Jun 12
SRI LANKA-DS Oil & Gas	Nov 96 – Jun 12		
SRI LANKA-DS Consumer Gds	Dec 94 – Jun 12		
SRI LANKA-DS Consumer Svs	Dec 94 – Jun 12		
SRI LANKA-DS Industrials	Dec 94 – Jun 12		
SRI LANKA-DS Financials	Dec 94 – Jun 12		
SRI LANKA-DS Telecom	Jan 03 – Jun 12		
SRI LANKA-DS Technology	Jul 11- Jun 12		
THAILAND-DS Basic Mats	Dec 94 – Jun 12		
THAILAND-DS Consumer Gds	Dec 94 – Jun 12		
THAILAND-DS Consumer Svs	Dec 94 – Jun 12		
THAILAND-DS Industrials	Dec 94 – Jun 12		
THAILAND-DS Health Care	Dec 94 – Jun 12		
THAILAND-DS Financials	Dec 94 – Jun 12		
THAILAND-DS Telecom	Dec 94 – Jun 12		
THAILAND-DS Technology	Dec 94 – Jun 12		
THAILAND-DS Utilities	Jan 95 – Jun 12		

B. Summary Statistics

Table-B.1. Excess Returns: Summary Statistics. Statistics are computed for 10 different industries 23 different countries. For each country, the first and second line report the mean and standard deviation of the industries' excess returns. Line 3 shows the average Sharpe ratios. For emerging markets only, the last line provide the average spread between the emerging and the US stock excess returns, computed as in Def. 1. Values are computed on monthly basis and expressed in percentage points. The sample goes from January 1995 (or later) to June 2012.

Country	Oil&Gas	BasMats	ConsGds	ConsSvs	Industr	HC	Fin	Telec	Tech	Utilit

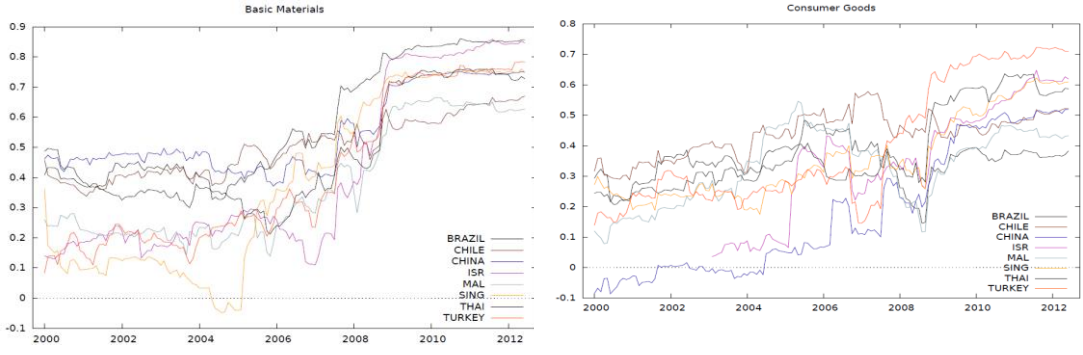
USA	0.9	0.8	0.5	0.6	0.8	0.7	0.6	0.4	0.9	0.6
	6.3	7.6	5.7	5.9	6.4	4.7	7.0	6.3	8.4	4.8
	14.6	10.0	8.8	10.9	12.6	14.1	9.1	6.4	11.1	11.5
ARG	0.4	1.0	0.1	1.0	0.8	n/a	0.5	0.4	n/a	-0.1
	12.8	12.1	15.1	12.4	12.4	n/a	13.0	13.5	n/a	10.9
	3.2	8.0	0.4	7.8	6.2	n/a	4.2	3.1	n/a	-1.0
	-0.5	0.2	-0.4	0.3	0.0	n/a	-0.1	0.0	n/a	-0.7
BRAZIL	1.9	1.3	1.7	2.1	1.5	0.9	1.1	0.8	3.0	0.8
	12.8	11.9	10.2	12.8	10.7	13.8	10.6	11.4	11.9	11.8
	14.6	10.6	16.5	16.5	13.7	6.7	10.1	7.1	24.8	7.0
	0.9	0.5	1.2	1.5	0.7	0.3	0.4	0.4	2.0	0.3
CHILE	0.7	0.9	0.7	1.1	0.5	1.2	0.8	0.5	1.7	0.4
	7.6	8.0	7.2	8.4	8.1	9.5	6.1	8.7	8.7	6.9
	9.2	11.8	10.4	13.6	6.2	12.5	12.5	5.7	19.6	6.5
	-0.2	0.2	0.2	0.5	-0.3	0.5	0.1	0.1	0.8	-0.1
CHINA	1.6	1.8	2.2	0.9	1.5	4.8	1.4	1.3	0.9	1.4
	13.6	15.2	14.8	13.1	14.3	14.4	11.9	10.5	10.3	10.9
	11.4	12.1	14.6	6.6	10.6	33.3	11.8	12.6	8.5	12.8
	0.6	1.1	1.7	0.2	0.7	4.1	0.8	0.9	-0.1	0.8
CZ REP	1.5	0.6	0.8	1.4	1.0	n/a	1.5	1.0	n/a	1.4
	1.5	0.6	0.7	1.4	1.0	n/a	1.5	1.0	n/a	1.4
	1.5	0.6	0.8	1.4	1.0	n/a	1.6	1.0	n/a	1.4
	0.5	-0.2	0.3	0.8	0.2	n/a	0.9	0.6	n/a	0.9
HK	3.1	0.5	1.2	0.4	0.7	n/a	0.7	0.9	1.8	0.7
	20.6	10.6	8.1	7.8	8.7	n/a	8.4	9.5	14.4	4.3
	15.1	4.7	14.4	5.7	8.3	n/a	8.8	9.6	12.8	17.1
	2.2	-0.3	0.7	-0.2	-0.1	n/a	0.1	0.5	0.9	0.2
HUN	1.8	1.0	0.6	n/a	-0.5	1.3	2.2	0.5	-0.7	0.6
	12.8	11.7	10.6	n/a	11.1	11.3	13.4	11.1	16.7	10.5
	14.2	8.2	5.9	n/a	-4.1	11.6	16.4	4.5	-4.3	5.7
	0.9	0.2	0.1	n/a	-1.3	0.6	1.6	0.1	-1.7	0.0
INDIA	0.7	1.3	1.0	1.1	n/a	0.8	1.2	0.7	2.8	1.0
	11.2	11.6	8.4	11.5	n/a	7.6	12.4	13.2	16.4	11.2
	5.9	11.2	11.6	9.2	n/a	10.1	9.6	5.6	17.	8.5

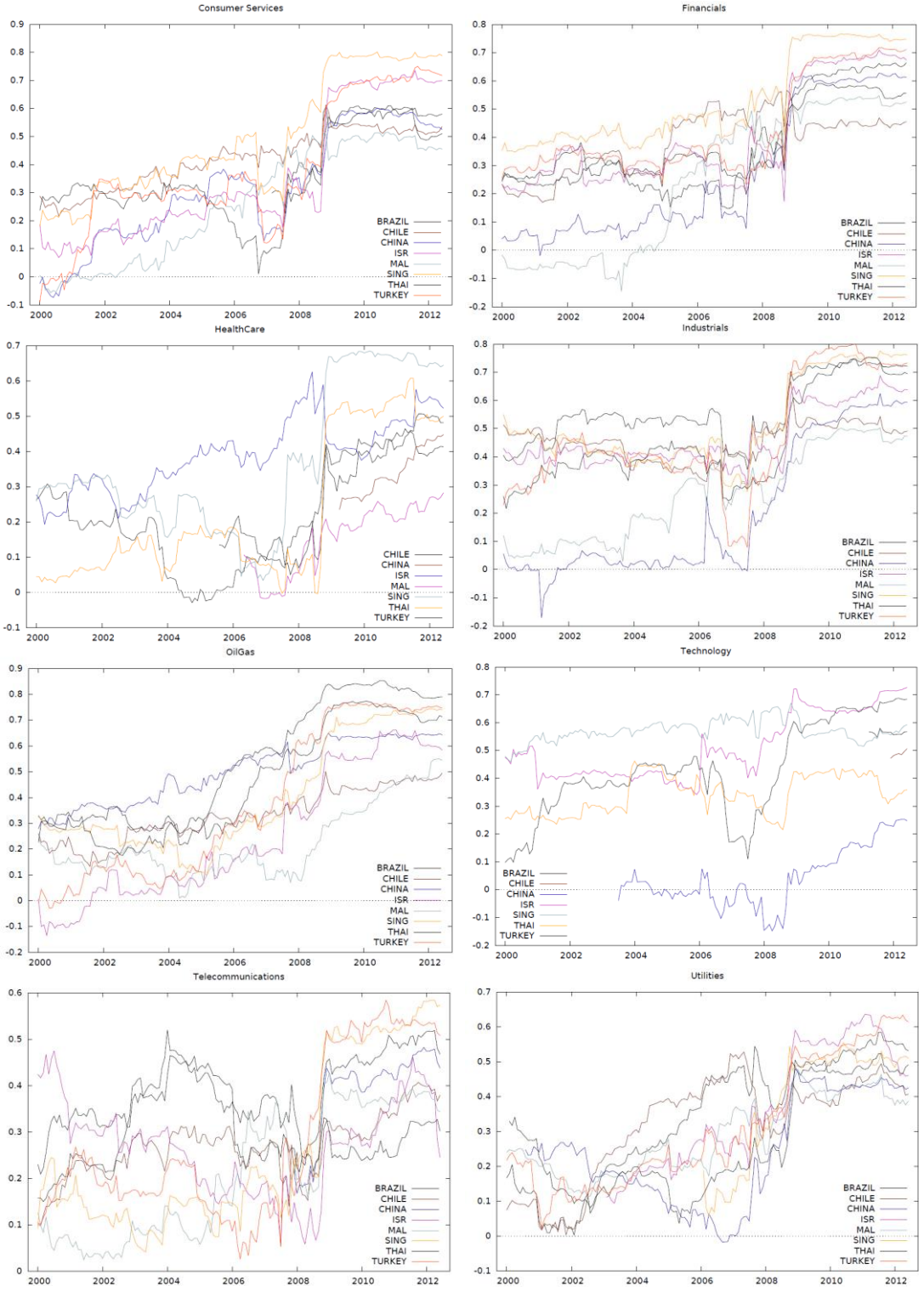
									0	
	-0.3	0.5	0.5	0.4	n/a	0.1	0.6	0.3	1.9	0.4
ISRAEL	1.4	1.3	1.4	1.2	0.7	1.1	0.8	0.7	0.4	1.4
	9.5	10.0	10.6	8.2	8.7	7.6	8.0	8.1	10.8	10.6
	15.2	12.7	13.0	14.9	7.6	14.3	9.7	8.9	3.4	13.5
	0.5	0.5	0.9	0.6	-0.1	0.4	0.1	0.3	-0.6	0.9
MAL	0.8	0.2	0.6	0.5	0.3	3.5	0.9	0.6	1.6	0.3
	8.1	10.9	9.9	8.7	8.5	9.6	11.1	9.3	16.5	8.4
	9.5	2.0	6.5	5.6	3.5	36.1	8.1	6.4	9.9	4.0
	-0.2	-0.5	0.1	-0.2	-0.5	2.8	0.3	0.2	0.7	-0.2
MEX	n/a	1.9	-0.1	0.7	0.5	2.4	1.3	n/a	n/a	1.4
	n/a	12.1	12.7	9.1	11.9	12.2	11.2	n/a	n/a	9.4
	n/a	15.4	-0.9	8.0	4.1	19.6	11.4	n/a	n/a	15.0
	n/a	1.1	-0.6	0.1	-0.3	1.7	0.6	n/a	n/a	0.9
PAK	1.2	0.7	1.2	0.4	1.7	0.6	1.1	0.1	n/a	0.6
	12.4	9.9	10.0	16.4	30.2	9.8	11.7	12.7	n/a	12.5
	9.9	7.4	12.2	2.6	5.5	6.3	9.2	0.9	n/a	4.5
	0.3	0.0	0.7	-0.2	0.9	-0.1	0.4	-0.3	n/a	0.0
PERU	1.2	1.1	0.5	4.0	2.3	n/a	1.5	1.6	n/a	0.7
	17.6	8.0	6.0	25.1	21.5	n/a	6.7	16.7	n/a	6.5
	7.0	13.7	9.1	16.0	10.6	n/a	21.9	9.6	n/a	11.1
	0.3	0.3	0.1	3.4	1.5	n/a	0.8	1.2	n/a	0.2
PHIL	0.5	0.6	0.4	0.2	0.8	n/a	0.4	0.6	n/a	0.6
	14.7	17.4	8.2	11.6	12.1	n/a	10.2	9.0	n/a	11.5
	3.7	3.5	5.4	1.6	6.9	n/a	4.2	6.1	n/a	5.4
	-0.4	-0.2	-0.1	-0.5	0.0	n/a	-0.2	0.2	n/a	0.1
POL	1.1	1.8	0.8	1.4	0.3	n/a	1.2	0.6	0.6	1.3
	10.5	12.4	8.5	11.7	10.8	n/a	10.9	10.7	12.7	13.0
	10.6	14.4	9.4	12.0	2.8	n/a	11.0	6.0	4.5	10.0
	0.2	1.0	0.3	0.8	-0.5	n/a	0.6	0.2	-0.4	0.8
RUSSIA	2.0	2.5	2.3	3.9	2.8	1.2	3.5	1.7	n/a	1.8
	14.5	13.3	12.3	15.8	19.6	17.2	21.5	16.1	n/a	18.8
	13.8	18.4	18.9	24.8	14.4	7.1	16.3	10.7	n/a	9.7
	1.1	1.7	1.8	3.3	2.0	0.6	2.9	1.3	n/a	1.3
SING	1.1	1.2	1.2	0.6	0.6	0.7	0.7	0.4	0.1	3.1
	12.1	14.3	11.2	7.1	7.4	8.0	8.9	7.1	14.6	15.8
	8.7	8.4	10.3	8.9	8.6	8.4	7.6	6.1	1.0	19.8
	0.1	0.5	0.7	0.0	-0.2	0.0	0.0	0.0	-0.8	2.6
SA	1.3	1.0	1.4	1.0	0.9	1.0	0.9	2.1	n/a	n/a
	10.3	12.4	11.1	10.2	9.8	9.3	9.5	13.9	n/a	n/a
	12.3	7.9	13.0	10.1	8.9	11.2	10.0	15.2	n/a	n/a
	0.3	0.2	1.0	0.4	0.1	0.4	0.3	1.7	n/a	n/a

SriLanka	1.8	n/a	0.8	0.5	0.9	n/a	0.6	0.5	n/a	-9.3
	9.6	n/a	8.9	9.7	9.6	n/a	8.8	9.6	n/a	7.0
	18.6	n/a	9.4	4.9	9.3	n/a	6.6	4.7	n/a	-132.7
	0.9	n/a	0.3	-0.2	0.1	n/a	-0.1	0.1	n/a	-9.8
TAIWAN	1.2	0.8	0.7	0.0	0.8	n/a	0.0	0.4	1.2	n/a
	6.9	7.9	9.4	8.4	10.9	n/a	10.2	6.4	11.9	n/a
	17.2	10.6	7.9	0.4	7.8	n/a	0.1	6.6	10.1	n/a
	0.3	0.1	0.2	-0.6	0.0	n/a	-0.6	0.0	0.3	n/a
THAI	1.2	1.0	1.0	0.7	1.5	0.8	0.4	0.7	1.3	0.9
	11.0	16.2	13.2	9.4	14.2	8.9	14.3	12.7	15.9	10.3
	11.3	6.0	7.7	7.9	10.4	9.2	2.6	5.2	7.9	8.7
	0.3	0.2	0.5	0.1	0.7	0.2	-0.3	0.3	0.3	0.3
TURKEY	1.9	2.3	1.8	2.0	2.1	3.1	2.3	2.0	3.4	2.6
	17.2	16.8	15.6	18.8	17.3	16.7	17.0	19.4	21.3	19.1
	11.1	13.8	11.7	10.4	12.0	18.4	13.7	10.5	15.8	13.8
	1.0	1.6	1.3	1.3	1.3	2.4	1.7	1.6	2.4	2.1

C. International Stock Markets Co-Movements

Figure-C.1. Industry-by-Industry Rolling Correlation Coefficients. Correlation coefficients are estimated using a rolling sample of 60 months. The US industrial stock markets are used as benchmark. The sample period goes from January 1995 (or later) to June 2006.

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